

PATENT COOPERATION TREATY
PCT
INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)

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| Applicant's or agent's file reference TS 5567 PCT | FOR FURTHER ACTION | See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416) |
| International application No. PCT/EP 03/50966 | International filing date (day/month/year) 09.12.2003 | Priority date (day/month/year) 09.12.2002 |
| International Patent Classification (IPC) or both national classification and IPC C10G65/04 | | |
| Applicant SHELL INTERNATIONALE RESEARCH MAATSCHAPPIJ B.V. | | |

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| <p>1. This International preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 7 sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of sheets.</p> |
| <p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> I <input checked="" type="checkbox"/> Basis of the opinion II <input type="checkbox"/> Priority III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input type="checkbox"/> Certain defects in the international application VIII <input type="checkbox"/> Certain observations on the international application |

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| Date of submission of the demand 16.06.2004 | Date of completion of this report 21.03.2005 |
| Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016 | Authorized Officer Deurinck, P Telephone No. +31 70 340-2404 |



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP 03/50966

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-19 as originally filed

Claims, Numbers

1-19 as originally filed

Drawings, Sheets

1/3-3/3 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- the language of publication of the international application (under Rule 48.3(b)).
- the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- contained in the international application in written form.
- filed together with the international application in computer readable form.
- furnished subsequently to this Authority in written form.
- furnished subsequently to this Authority in computer readable form.
- The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- the description, pages:
- the claims, Nos.:
- the drawings, sheets:

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5. This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | |
|-------------------------------|-------------|---------------|
| Novelty (N) | Yes: Claims | 4,9,18,19 |
| | No: Claims | 1-3,5-8,10-17 |
| Inventive step (IS) | Yes: Claims | |
| | No: Claims | 1-19 |
| Industrial applicability (IA) | Yes: Claims | 1-19 |
| | No: Claims | |

2. Citations and explanations

see separate sheet

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AD V:

D1: US 5 951 848
D2: WO 02 46333
D3: US 5 543 035
D4: EP 0 575 077
D5: US 6 051 127
D6: US 5 378 351
D7: Journal of Catalysis 196, 180-189 (2000), G. Kishan, V.H.J. de Beer, J.A.R van Veen, J.W. Niemantsverdriet
D8: WO 00 29511

1. Novelty (Art. 33(2) PCT)

1.1

The present application does not meet the requirements of Article 33 PCT, because the subject-matter of independent **Claim 1** is not new.

Document D1 discloses a process to prepare a base oil having a viscosity index between 86 and 108 (see D1: Table 2) starting from a distillate (see D1: column 4, lines 14-25) by

- contacting the feedstock in the presence of hydrogen with a sulphided hydrocracking/hydrodesulphurisation catalyst comprising Nickel and Tungsten on an acid amorphous silica-alumina carrier (see D1: column 4, line 59 - column 7, line 39); and
- performing a pour point reducing step on the effluent of step a) to obtain the base oil (see D1: column 8, line 17 - column 10, line 47).

Similar novelty objections can be made based on the documents D2 (claims 1, 2 and 13; page 14, line 14 - page 16, line 16), D3 (claims 1, 10, 11, 16, 17 and 18; figure 1; column 3, line 1, column 8, line 38; Examples 1 and 2), D4 (claims 1, 7 and 10; page 6, line 33 - page 8, line 53), D5 (claim 1 ; column 3, line 47 - column 4, line 65) and D6 (column 2, lines 1-2 and lines 16-50; column 3, lines 8-29; column 6, line 65 - column 7, line 4; claim 1).

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1.2

The present application does not meet the requirements of Article 33 PCT, because the subject-matter of the dependent **Claims 2, 3, 6 and 7** is not new.

The following unusable parameters are not mentioned in documents D1-D6:

- hydrodesulphurisation activity
- n-heptane cracking test value

However, at least some of the catalysts disclosed in D1-D6 fall within the ambit of the presently claimed catalysts.

1.3

The following dependent Claims are also not new:

- **Claim 5:** see D3: claim 1; see D6: column 4, lines 1-8;
- **Claim 8:** see D1: column 5, line 62 - column 6, line 21; see D2: page 15, lines 9-24; see D3: Table 1, see D4: page 7, lines 15-33; see D5: column 3, lines 47-64; see D6: column 3, lines 18-48;
- **Claim 10:** see D1: table 1; see D3: claim 1; see D4: Table 4;
- **Claim 11:** see D3: column 4, lines 26-40; see D6: column 4, lines 9-25;
- **Claim 12:** see D1: Table 2; see D2: Example 1; see D4: Table 2; see D5: column 3, line 45; see D6: column 3, lines 18-23;
- **Claim 13:** see D3: column 7, lines 12-47;
- **Claims 14 and 15:** see D3: claims 1 and 6;
- **Claim 16:** see D2: claim 1; see D3: claim 17; see D4: page 11, lines 33-40; see D5: column 7, lines 7-28; see D6: column 7, lines 1-4;
- **Claim 17:** see D1: claim 1; see D2: claim 1; see D3: claim 17; see D4: page 11, lines 33-40; see D5: column 7, lines 7-28; see D6: column 7, lines 1-4;

2. Inventive steps (Art. 33(3) PCT)

2.1

The present application does not meet the requirements of Article 33 PCT, because the subject-matter of dependent **Claim 4** does not involve an inventive step in the sense of Article 33(3) PCT.

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Document D1 is considered to represent the most relevant state of the art.

The subject-matter of Claim 4 differs from D1 in that nickel and tungsten are impregnated in the presence of a chelating agent, whereas a chelating agent is not mentioned in D1 (*distinguishing feature*).

The *technical effect* that is achieved with this distinguishing feature is to improve the hydrodesulphurisation activity (see page 5, lines 8-10).

The *problem to be solved* by the present invention may be regarded as: "To provide a hydrodesulphurisation catalyst with an increased activity".

Document D7 discloses a process for preparing a hydrodesulphurisation catalyst with an increased activity by impregnating nickel and tungsten in the presence of a chelating agent (see D7: page 187-188).

Starting from the disclosure of D1 and intending to solve the above mentioned problem, a person skilled in the art had an incentive from D7 to use a chelating agent for impregnating nickel and tungsten.

Thus the subject-matter of dependent Claim 4 does not involve an inventive step.

2.2

There is no evidence on file that the additional technical features of dependent **Claim 9** might cause a technical effect. Consequently, it cannot be seen which technical problem is solved. Therefore, an inventive step cannot be acknowledged.

2.3

The present application does not meet the requirements of Article 33 PCT, because the subject-matter of dependent **Claims 18 and 19** does not involve an inventive step in the sense of Article 33(3) PCT.

Document D5, which is considered to represent the most relevant state of the art, discloses a process for the preparation of lubricating base oils having a viscosity index of at least 80 comprising a dewaxing step using as a catalyst Pt/ZSM-5 (see D5: column 7, lines 38-46; claim 1).

The subject-matter of claims 18 and 19 differs from D5 in that the catalyst is a silica

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bound and dealuminated Pt/ZSM-12,22 or 23 catalyst (*distinguishing feature*).

The technical effect that is achieved with this distinguishing feature is to increase the base oil yield (page 13, line 21 - page 14, line 6).

The problem to be solved by the present invention may be regarded as: "To provide an improved process resulting in a increased base oil yield".

Document D8 discloses a process for the catalytic dewaxing of a hydrocarbon feed (see D8: claim 1). D8 discloses that a silica bound and dealuminated Pt/ZSM-12 has a higher product yield than a silica bound and dealuminated Pt/ZSM- 5 catalyst (see D8: Table 2).

Starting from the disclosure of D5 and intending to solve the above-mentioned problem, a person skilled in the art had an incentive from D8 to use a silica bound and dealuminated Pt/ZSM-12 catalyst.

Thus the subject-matter of dependent Claims 18 and 19 does not involve an inventive step.